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PATENT SPECIFICATION (11) 1 326 891

DRAWINGS ATTACHED

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(19)

(54) IMPROVEMENTS IN OR RELATING TO FOLDERS OR SHEETERS FOR PRINTING PRESSES

(71) I, LOUIS MATTHEW SURBROOK, a citizen of the United States of America, of 27 Framingham Road, Sale, Cheshire, do hereby declare the invention for which I pray that a Patent may be granted to me, and the method by which it is to be performed to be particularly described in and by the following statement:—

This invention is concerned with improvements in a method for arresting or slowing the rapidly moving folded or sheeted product delivered from a folder or sheeter for printing presses.

It is an object of the present invention to provide a method of arresting or slowing the product moving at high speeds without risk of buckling which has hitherto placed an upper limit on the delivery speeds attainable by folders or sheeters.

According to the present invention, there is provided a method of arresting or slowing sufficiently for take-off the rapidly moving product delivered by a folder or sheeter for a printing press, comprising accelerating an abutment to substantially the product velocity before the leading edge of the product impinges thereon and then decelerating the abutment and thereby the product to rest or to a reduced speed, the abutment being carried by endless conveyor means and travelling on a rectilinear path during product deceleration.

Embodiments of the present invention will now be described by way of example only with reference to the accompanying drawings in which:

Fig. 1 is a general schematic view of a folder with stop mechanisms operating in accordance with the invention;

Fig. 2 is a general, perspective view of the folder;

Figs. 3, 4 and 5 are perspective views illustrating three successive stages in the operation of one embodiment of stop mechanism, and

Fig. 6 is a perspective, cut-away view of a second embodiment of stop mechanism showing the associated take-off means.

[Price 25p]

Referring firstly to Figs. 1 and 2, the folder generally comprises the following items: a draw roller assembly 1; a slitting roller 2 co-operating with blades 3; angle bars 4; compensating rollers 5; a former 6; a pair of idler rollers 7; two sets of nipping rollers 8; a cutting zone 9; a separator zone 10; stop mechanisms 11 and take-off means 12.

In brief, the folder operates as follows. A printed web W, delivered from a printing press (not shown) at the peripheral speed of the printing cylinder thereof, is drawn over the slitting roller 2 and is cut longitudinally into a number of ribbons w which are interleaved into band form and positionally adjusted by the angle bars 4 and compensating rollers 5, the band then being folded longitudinally by the former 6. The band then arrives at the cutting zone 9 where it is cut in two stages into units comprising a desired number of signatures. Successive units are diverted alternately to upper and lower branch conveyors at the ends of which are positioned the stop mechanisms 11, the arrested signatures then being removed from the folder by the take-off means 12 and collating delivery means (not shown).

A complete description of the construction and mode of operation of the illustrated folder is given in my co-pending Application No. 41912/69 Serial No. 1311483 and attention is directed to the Claims of this application and also to the description and claims of my related co-pending application Nos. 41913/69 (Serial No. 1311484), 41916/69 (Serial No. 1326892) and 41912/69 (Serial No. 1326893). The remainder of this specification will be devoted to an account of the stop mechanisms 11 with which the present application is particularly concerned.

As shown in Figs. 3, 4 and 5 a stop mechanism comprises twin, parallel, endless belts or chains 11*a* driven through pulleys or sprockets 11*b* mounted on a shaft 11*c* rotatable through a Geneva or other known

intermittent motion mechanism 11*d*. The belts 11*a* carry two movable abutments or stops 11*e* positioned at opposed locations midway along the belts and the idler pulleys or sprockets 11*f* are mounted in such a way as to permit free passage therebetween of a vertically movable folding blade 11*g*.

As the leading signature SG of a unit approaches the stop mechanism 11 the nearest stop 11*e* is caused to move in the same direction (Fig. 3), accelerate until it is moving at the same speed as the signature (Fig. 4) and decelerate to rest thus arresting the signature (Fig. 5). Towards the end of this operation, the folding blade 11*g* begins to descend, completing its downward motion when the mechanism has reached the position shown in Fig. 5 so as to bring the signature SG between the nipping rollers (shown in dotted line) thereby introducing a further centre fold. This form of stop mechanism may advantageously be utilized if the folder does not include a former 6.

If this further fold is not required then the mechanism illustrated in Fig. 6 may be utilized. In this case, there is again provided an intermittent drive mechanism 11*d* for accelerating and decelerating a movable stop but the stop is in the form of a plurality of vertical projections 11*h* extending upwardly through parallel slots 11*i* in a bottom plate 11*j* into channels 11*k* formed in the lower surface of an upper plate 11*l*.

A unit of signatures enters between the top and bottom plates of the stop mechanism and the leading signature is arrested by the movable stop in the same manner as described for the previous arrangement. Each of the succeeding signatures of the unit is stopped by the abutment of its leading edge against the trailing edge of the immediately preceding signature.

It will be seen that the width of the stop mechanism illustrated in Fig. 6 is narrower than the corresponding dimension of the signatures which it arrests so as to enable the take-off means 12 to grip the borders of these signatures.

It will be appreciated that the movable stop need not decelerate completely to rest but may simply have its speed reduced sufficiently to permit removal of the product and suitable means for driving the stop in this way will be apparent to a person skilled in the field.

WHAT I CLAIM IS:—

1. A method of arresting or slowing sufficiently for take-off the rapidly moving product delivered by a folder or sheeter for a printing press, comprising accelerating an abutment to substantially the product velocity before the leading edge of the product impinges thereon and then decelerating the abutment and thereby the product to rest or to a reduced speed, the abutment being carried by endless conveyor means and travelling on a rectilinear path during product deceleration.

2. A method as claimed in claim 1 wherein the abutment is carried by and extends between twin, parallel endless belts or chains.

3. A method as claimed in claim 2 wherein the belts or chains carry two abutments thereon.

4. A method as claimed in claim 2 or 3 wherein a vertically movable folding blade is used to introduce a longitudinal fold into the decelerated product.

5. A method as claimed in claim 1 wherein the abutment has a row of vertical projections which travel along a product-receiving space defined by a top and a bottom plate.

6. A method as claimed in claim 5 wherein the vertical projections extend upwardly through parallel slots in the bottom plate into channels formed in the lower surface of the top plate.

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1326891 COMPLETE SPECIFICATION
6 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 1

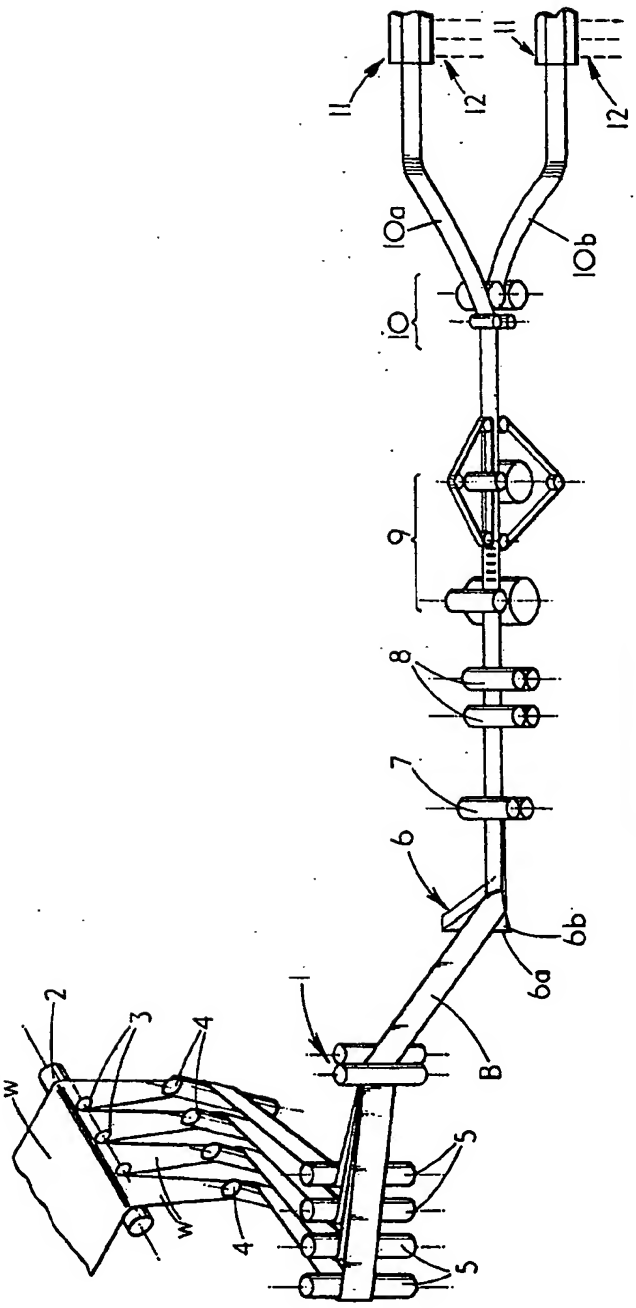

FIG. 1

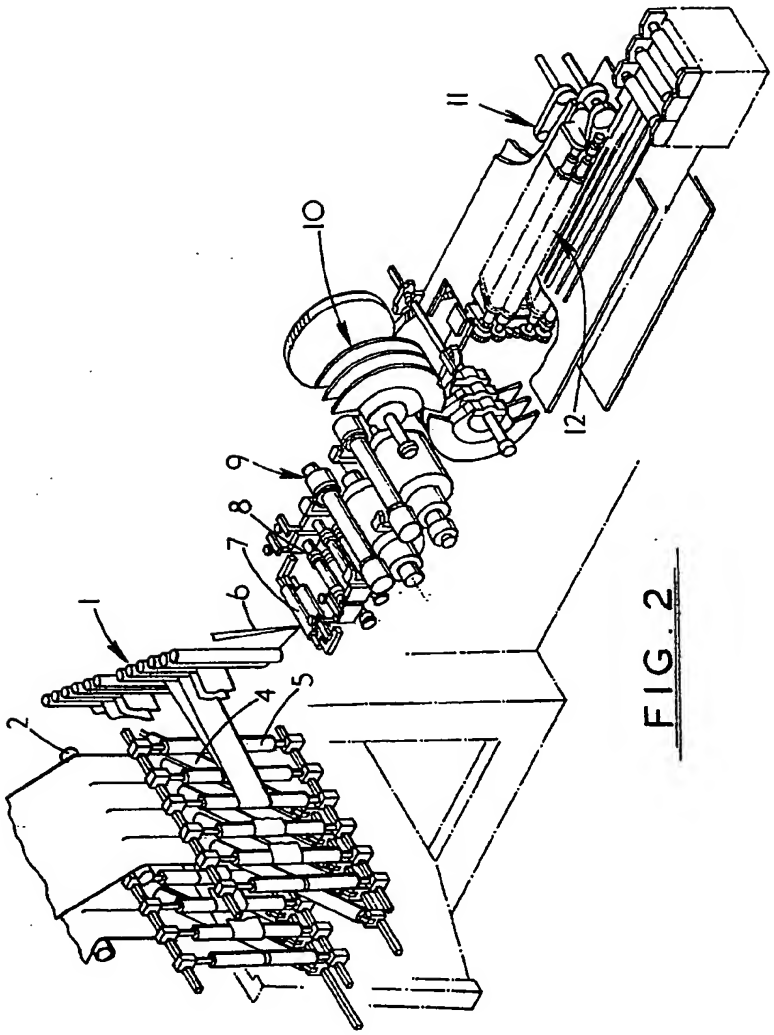

FIG. 2

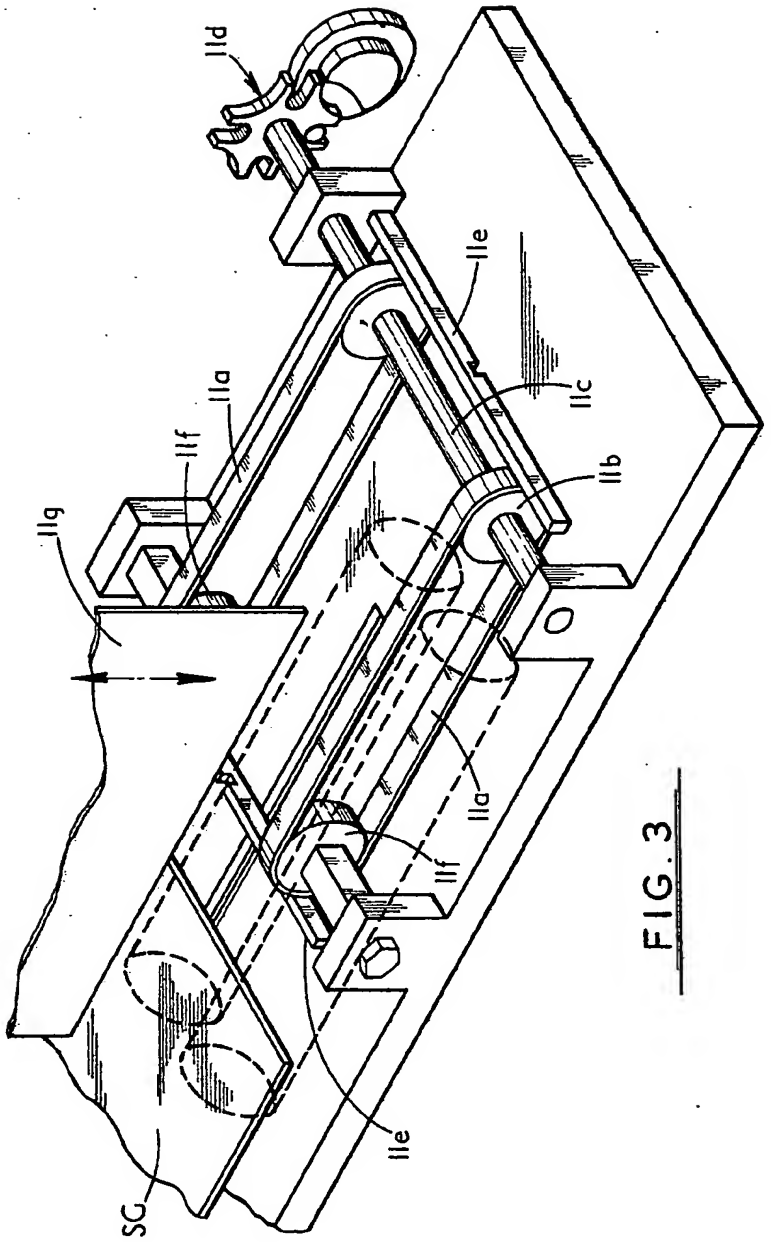

FIG. 3

1326891 COMPLETE SPECIFICATION
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Sheet 4

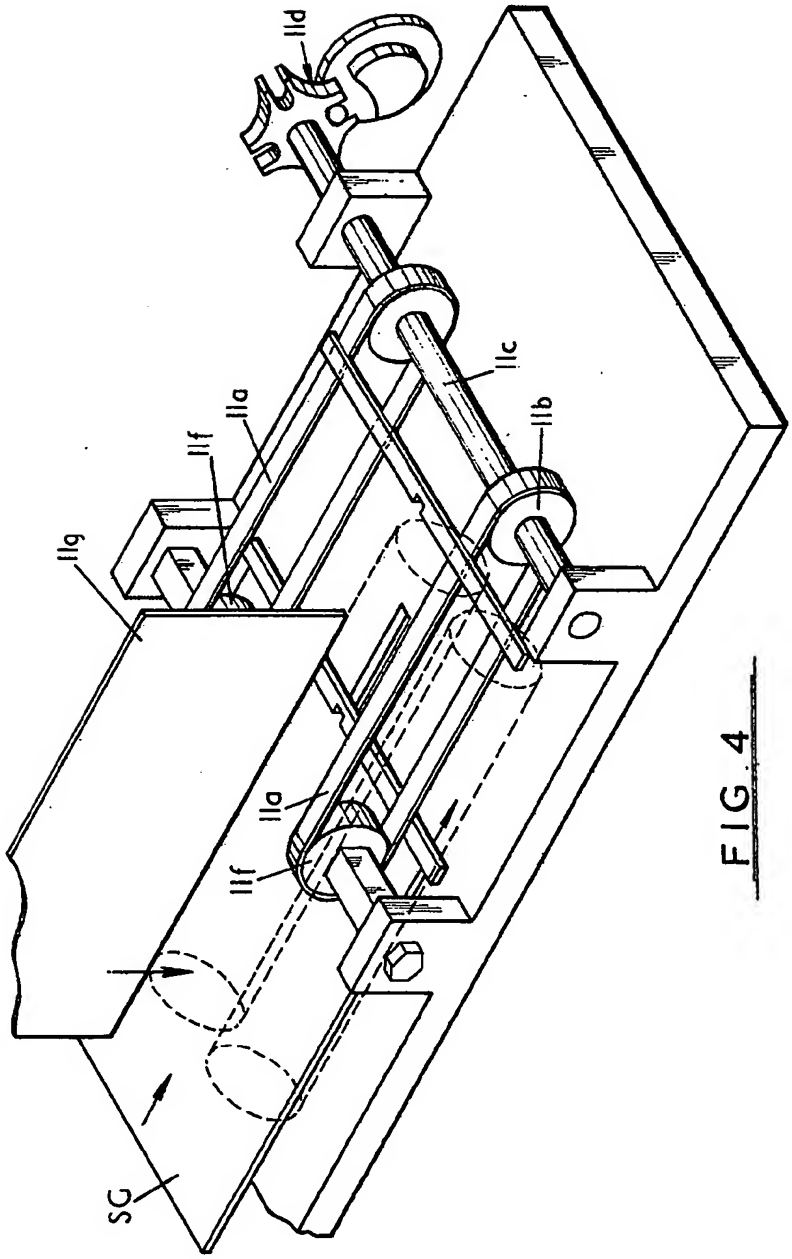

FIG. 4

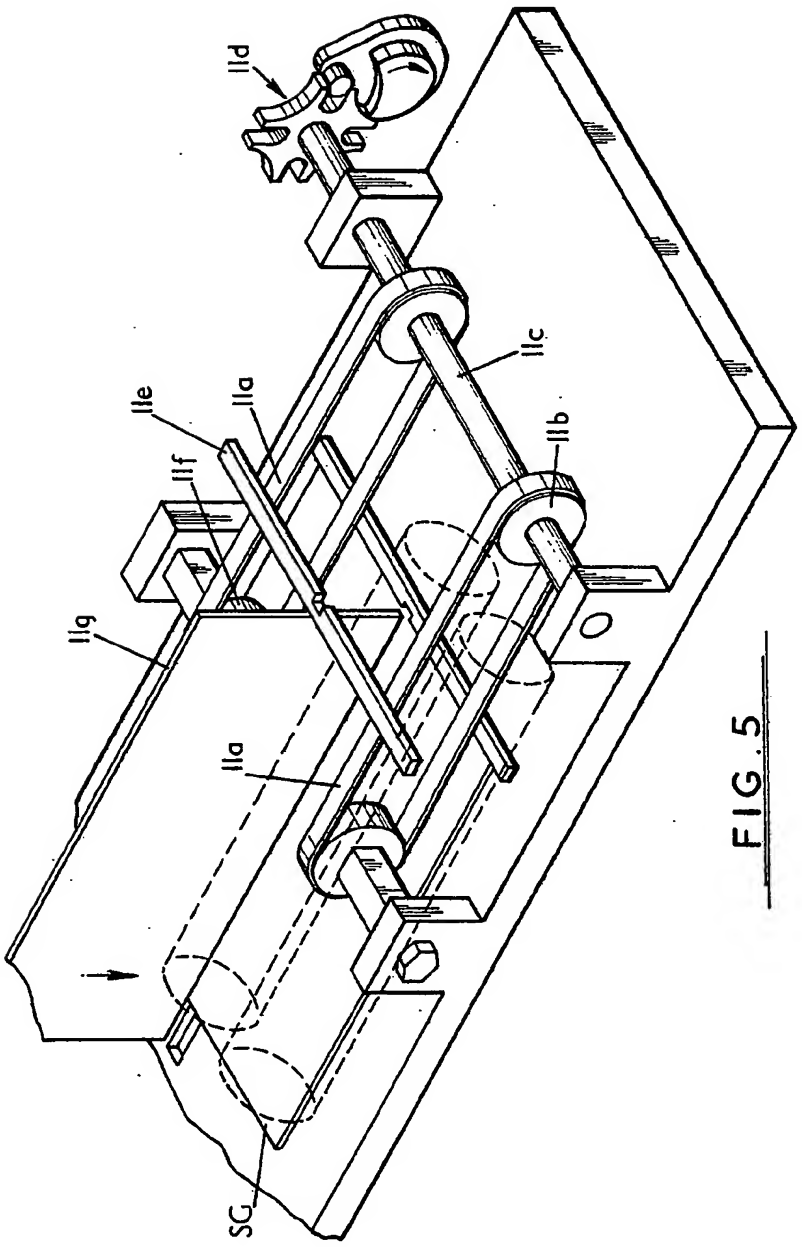

FIG. 5

1326891 COMPLETE SPECIFICATION
6 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 6

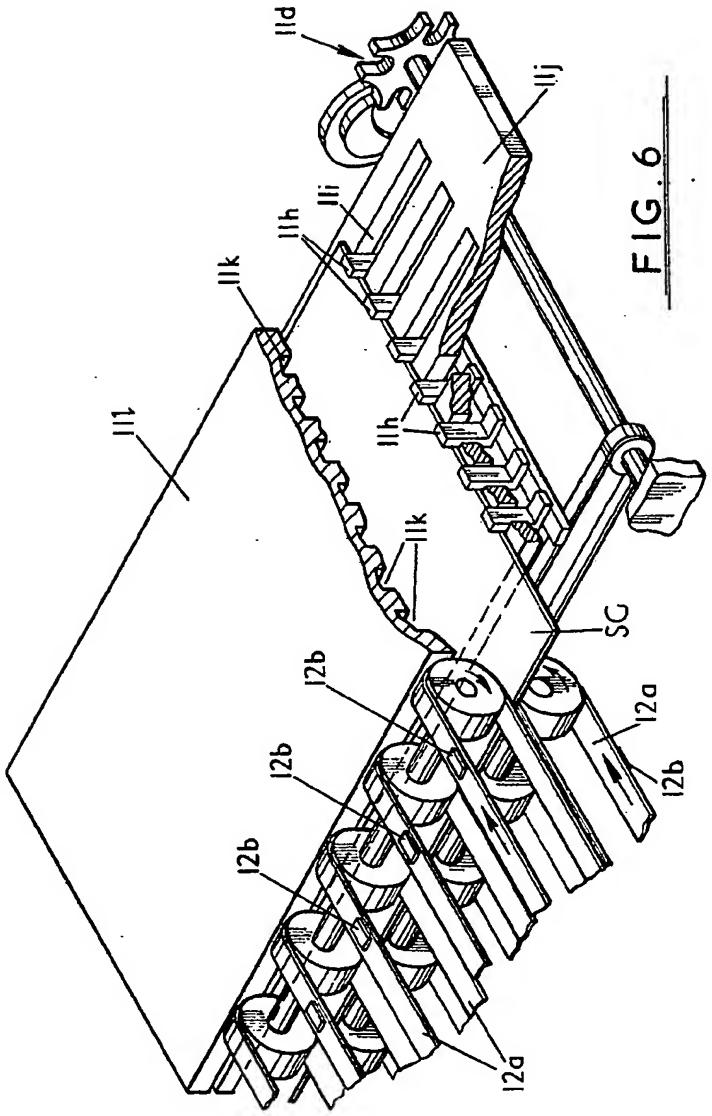

FIG. 6